

The Institute of Biochemistry and Biophysics PAS is looking for a Master's Student for 12 months for the execution of OPUS scientific project entitled: "Design of photoswitchable dismantlers of biomaterials made of amyloid fibrils.", financed by the National Science Centre.

Project description:

This project aims at employing photoswitching compounds, widely used in materials science to build photo-mechanical responsive systems (e.g. in optical switching and data storage devices), as molecular machines hindering particular protein-protein interactions. These photoswitches, able to undergo photo-induced excitation followed by the release of the gained energy due to change in their shapes, shall exert a mechanical force on the targeted protein, leading to perturbations of its structure.

The proposed project will employ methods of computer simulations (at quantum mechanics and molecular dynamics levels of theory) as well as experimental assays to explore the photoresponsive nature of newly designed photoswitches with regard to their abilities to target particular proteins and alter their native propensity to build macromolecular assemblies by (i) blocking the sites responsible for protein-protein interactions or/and by (ii) destroying already aggregated proteins. This work will explore the potential of these smart materials for the generation of novel nanomachines for biotechnology enabling the control of production and degradation of bioinspired materials based on protein frameworks. Moreover, the results of the project may become the basis for development of new molecular machines inhibiting or destructing pathological assemblies of proteins (e.g. associated with Alzheimer's disease), with a potential application in molecular medicine.

NCN call for proposals type: OPUS –ST

Required professional qualifications:

1. Being a second degree student or minimum fourth year student of the master's studies of a faculty of natural sciences.
2. Knowledge of Linux operating system and basics of computational chemistry. Programing skills will be an advantage.
3. Declared interest in the topic of the project and a motivation to learn molecular modelling techniques as well as relevant experimental assays for analysis of protein-protein and protein-ligand interactions.
4. Excellent knowledge of written and spoken English.
5. Communication and teamwork skills are essential.
6. High motivation to do science (supported by involvement in research projects, publications, conferences, stipends and stages).

Required documents:

1. Curriculum Vitae (CV)
2. Cover letter
3. A declaration of consent to the processing of personal data
3. Recommendation letter (optional)

The conditions of employment:

Scholarship in the amount of PLN 4500 gross / month

How to apply:

The documents shall be submitted online to the project manager: Dorota Niedzialek dniedzialek@ibb.waw.pl

Shortlisted candidates will be invited for an online interview.

Deadline for submitting offers: 8.10.2021, 23:59.